DETAILED ACTION

Continued Examination Under 37 CFR 1.114

13. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 18, 2009 has been entered.

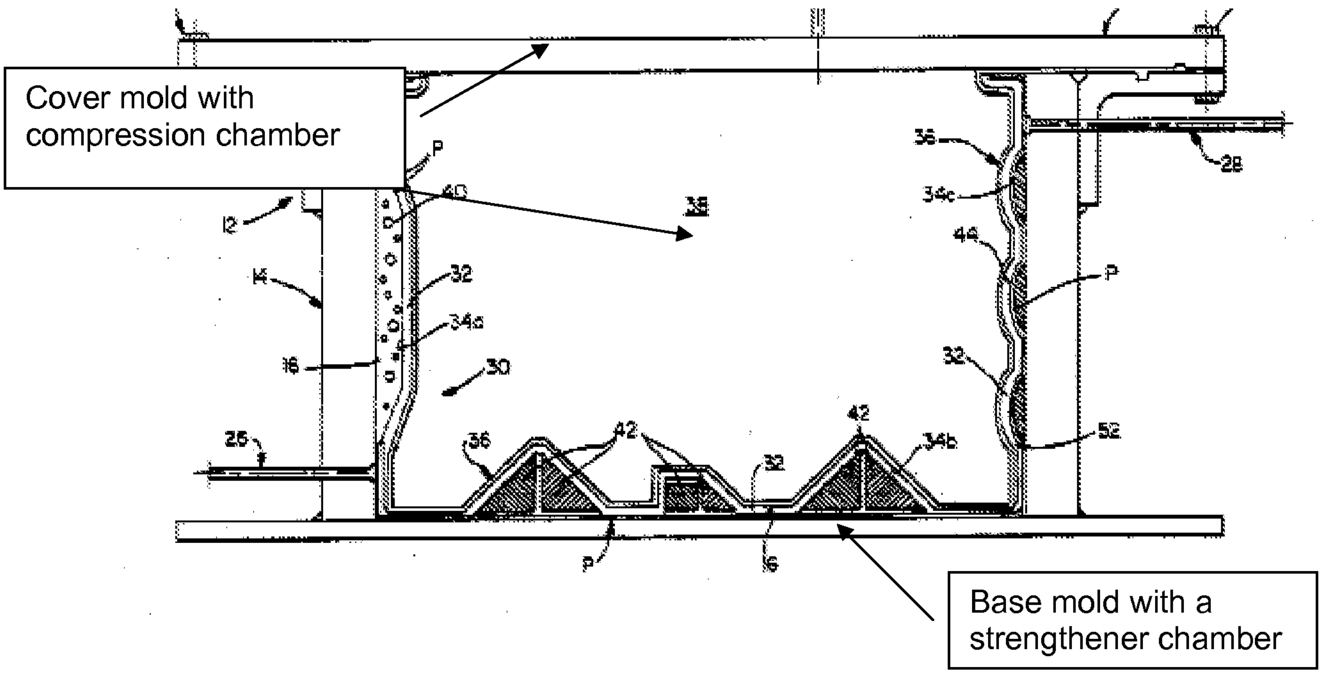
Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 7, 12 – 15, 19 – 20, 26 – 28, 45, 70 – 71, 78 – 81 and 85 – 88 are rejected under 35 U.S.C. 102(b) as being anticipated by Leoni, et al. (U.S. 5,152,949). Leoni, et al. teach a mold assembly for generating a composite part from a strengthener in a generally solid phase and a matrix in a generally liquid phase; said mold assembly comprising: a base mold including a strengthener chamber for receiving the strengthener (item 14 – figure 1), a matrix injection inlet for injecting the matrix in said strengthener chamber (item 26 – figure 1) and an evacuation outlet (item 28 – figure 1),

said inlet and said outlet defining a propagation direction (column 5, lines 15 – 20 and 27 – 31); a cover mold including a compression chamber defining a compression wall and (item 38 – figure 1) and a fluid control aperture for injecting a controlling fluid in said compression chamber (item 24 – figure 1); said cover mold being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent (figure 1); and a deformable member defining the boundary between said strengthener chamber and said compression chamber (item 36 – figure 1), said deformable member being so configured as to pressurize the matrix toward the strengthener and propagate the matrix along said propagation direction upon compression exerted on said deformable member by the controlling fluid (figure 1; column 7, lines 55 – 68; column 10, lines 5 – 50), wherein said compression wall provides a physical obstacle to a deflection of said deformable member as the matrix is injected into said strengthener chamber; wherein said matrix injection inlet includes a diffusion passage provided on a contact wall of said strengthener chamber (figure 1); wherein said evacuation outlet is connectable to a vacuum source to selectively generate at least a partial vacuum in said strengthener chamber (column 10, lines 5 – 10); and wherein said fluid control aperture is connectable to a fluid source to generate pressure in said compression chamber (column 9, lines 53 – 62).



With respect to claims 12 – 15 and 19 – 20, Leoni, et al. further teach that said gap has a variable thickness because of the pressure exerted on the bladder, such that the introduction of a vacuum between the bladder 36 and cauls 32 evacuates gas between the two layers, thereby the thickness of the gap will ultimately vary (figure1; column 9, lines 40 – 50); wherein said compression chamber has a first thickness, said strengthener chamber has a second thickness, said first and second thickness being variable upon deformation of said deformable member (column 9, lines 65 – 68; column 10, lines 15 – 25); wherein said membrane is impermeable to liquid (column 7, lines 45 – 68); wherein said strengthener chamber comprises a contact wall for locating the strengthener, said contact wall having a controlled surface finish (figure 1; column 5, lines 20 – 24); and wherein said base mold and said cover mold are rigid (figure 1; column 5, lines 13 – 15).

With respect to claims 26 – 28, 70 and 71, the reference also teaches that the said deformable member includes an elastic material being provided in at least a portion of said compression chamber and adjacent to said strengthener chamber (figure 1; column 5, lines 34 – 50); wherein said cover mold includes compartmentalized portions so configured as to independently move with respect to one another toward and away from said strengthener chamber for providing a gap of variable thickness (figure 1; column 10, lines 15 – 50); wherein said mold assembly further includes a tube provided in said compression chamber and adjacent to said strengthener chamber, said tube being connected to a pressure source and deformable under pressure generated from the pressure source, said tube including at least one extremity mounted through said cover mold for controlling the pressure in said tube (item 24 – figure 1; column 9, lines 55 – 60); wherein said deformable member is able to be swollen in said compression chamber from the matrix permeating the strengthener to generate a deformation zone, said deformable member receiving pressure from the controlling fluid in proximity of said deformation zone for redirecting the matrix towards the strengthener (column 10, lines 15 – 25); wherein said deformation zone is adjacent to a matrix flow front corresponding to a portion of the strengthener impregnated by the matrix, said matrix flow front propagating in the strengthener along said propagation direction as the matrix in said deformation zone is redirected to the strengthener (figure 1).

With respect to claim 45, Leoni, et al. teach a mold assembly for generating a composite part from a strengthener and a matrix; said mold assembly comprising: a

base mold including a strengthener chamber for receiving the strengthener (item 14 – figure 1) and a matrix injection inlet for injecting the matrix in said strengthener chamber (item 26 – figure 1) and an evacuation outlet (item 28 – figure 1), said inlet and said outlet defining a propagation direction; a cover mold including a compression chamber defining a compression wall (item 38 – figure 1) and a fluid control aperture for injecting a controlling fluid in said compression chamber (item 24 – figure 1); said cover mold being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent (figure 1); and a deformable membrane member provided in a gap defined by said strengthener chamber and said compression chamber (item 36 – figure 1), said deformable member generating a deformation zone in said compression chamber from a portion of the matrix permeating the strengthener, said deformable member being pressurized by the controlling fluid in proximity of said deformation zone for redirecting the portion of matrix generating said deformation zone back to the strengthener and for propagating the matrix along said propagation direction (column 10, lines 1 – 50); wherein said compression wall provides a physical obstacle to a deflection of said deformable member as the matrix is injected into said strengthener chamber.

With respect to claims 78 – 81 and 85 – 88, Leoni, et al. also teach that the controlling fluid is an incompressible fluid (column 9, lines 55 – 60); wherein the deformable member is further configured to contact said compression wall as the matrix propagates along said propagation direction; and wherein said deformable member is

configured to contact said compression wall to thereby form a first pressure region in said compression chamber and a second pressure region in said compression chamber, wherein the first pressure region is upstream of the second pressure region, and wherein a first pressure in the first pressure region is greater than a second pressure in the second pressure region; and wherein said fluid control aperture for injecting said controlling fluid is located in the vicinity of said matrix injection inlet for injecting the matrix (figure 1).

The Examiner notes that newly-amended claims 1 and 45 claim that the compression wall provides a "physical obstacle" to a deflection of said deformable member as the matrix is injected into said strengthener chamber. The Examiner contends that the apparatus of Leoni, et al. is fully capable of performing as such because as resin is injected into the plenum or space 52, a large enough quantity of resin may be injected which deforms or deflects the bladder 36 away from the mold walls and upwards to actually contact the cover mold wall or compression wall. Even though Leoni, et al. teach a method whereby the apparatus is operated which may differ from the intended use as claimed, the deformable member is capable of deflection upwards to the point where the compression wall of the cover mold ceases the deformable member from any further movement. Therefore, the Examiner contends that the apparatus of Leoni, et al. is fully capable of operating as claimed.

The Examiner also notes that newly-added claims 79 – 80 and 86 – 87 claim the movement of the deformable member or the movement of the deformable member as

the matrix is injected into the plenum. The Examiner contends that the apparatus of Leoni, et al. is fully capable of performing as such because enough resin can be injected into plenum or space 52 to cause the deformable member or bladder 36 to deflect upwards and contact the compression wall, such that two pressure zones are created, whereby the closest pressure zone to the resin inlet is greater than that furthest from the resin inlet.

The Examiner also notes that Applicant has claimed that the fluid control aperture is located in the “vicinity” of the matrix injection inlet. Given its broadest reasonable interpretation, ”vicinity” may be defined as in the same area as and thus because the fluid control aperture lies around the periphery of the mold, the fluid control aperture is in the “vicinity” of the matrix injection inlet.

Claims 1, 2, 4, 7 – 15, 18 – 19, 21 – 23, 25 – 28, 45, 70 – 71, 76 – 82 and 85 – 89 are rejected under 35 U.S.C. 102(b) as being anticipated by Cartwright (U.S. 6,506,325). Cartwright teaches a mold assembly for generating a composite part from a strengthener in a generally solid phase and a matrix in a generally liquid phase; said mold assembly comprising: a base mold including a strengthener chamber for receiving the strengthener (item 210 – figure 2), a matrix injection inlet for injecting the matrix in said strengthener chamber (item 220 – figure 2) and an evacuation outlet (item 216 – figure 2), said inlet and said outlet defining a propagation direction (figure 2); a cover mold including a compression chamber defining a compression wall (area between items 214 and 215 – figure 2) and a fluid control aperture for injecting a controlling fluid

in said compression chamber (item 232 – figure 2); said cover mold configured to be sealingly mounted to said base mold whereby said strengthener chamber and said compression chamber are adjacent ; and a deformable member defining the boundary between said strengthener chamber and said compression chamber, said deformable member being so configured as to pressurize the matrix toward the strengthener and propagate the matrix along said propagation direction upon compression exerted on said deformable member by the controlling fluid (item 214 – figure 2; column 5, lines 30 – 35), wherein said compression wall provides a physical obstacle to a deflection of said deformable member as the matrix is injected into said strengthener chamber; wherein said matrix injection inlet includes a diffusion passage provided on a contact wall of said strengthener chamber (figure 2); wherein said evacuation outlet is connectable to a vacuum source to selectively generate at least a partial vacuum in said strengthener chamber (column 5, lines 33 – 38); wherein said fluid control aperture is connectable to a fluid source to generate pressure in said strengthener compression chamber (item 228 – figure 2); wherein said fluid control aperture extends in said cover mold and said matrix injection inlet extends in said base mold in a generally similar direction (figure 2); wherein said cover mold includes a vent extending from said compression chamber and through said cover mold (item 230 – figure 2; column 5, lines 38 – 43); wherein said vent is connected to a vacuum source to selectively generate at least a partial vacuum in said compression chamber (item 230 – figure 2; column 5, lines 38 – 43); wherein said vent comprises a valve to regulate the flow of the controlling fluid through said vent (figure 2; column 5, lines 38 – 43, 58 – 61); wherein said gap has a variable thickness

(column 5, lines 53 – 55); wherein said compression chamber has a first thickness, said strengthener chamber has a second thickness, said first and second thickness being variable upon deformation of said deformable member (column 5, lines 53 – 57); wherein said deformable member includes a membrane sealingly mounted between said strengthener chamber and said compression chamber (item 214 – figure 2); wherein said membrane is impermeable to liquid (column 5, lines 30 – 35).

With respect to claims 18 – 19, 21 – 23 and 25 – 28, Cartwright also teaches that the said mold assembly includes temperature controlling means (column 5, lines 25 – 27); wherein said strengthener chamber comprises a contact wall for locating the strengthener, said contact wall having a controlled surface finish (figure 2; column 3, lines 59 – 67); wherein said deformable member includes a deformable element (item 217 – figure 2) and a membrane (item 214 – figure 2), said membrane being sealingly mounted between said strengthener chamber and said compression chamber, said deformable element being provided in at least a portion of said compression chamber (figure 2; column 5, lines 45 – 50); wherein a surface of said deformable element is so machined as to be complementary to the shape of the composite part (figure 2); wherein said machined surface of said member includes a series of grooved channels so configured as to receive said membrane (item 217 – figure 2; column 5, lines 45 – 50); wherein said deformable element includes a generally porous and elastic material (column 5, lines 45 – 50); wherein said deformable member includes an elastic material being provided in at least a portion of said compression chamber and adjacent to said strengthener chamber (figure 2); wherein said cover mold includes compartmentalized

portions so configured as to independently move with respect to one another toward and away from said strengthener chamber for providing a gap of variable thickness (column 5, lines 35 – 45).

With respect to claims 70 – 71 and 76 – 82, the reference also teaches that the said deformable member is able to be swollen in said compression chamber from the matrix permeating the strengthener to generate a deformation zone, said deformable member receiving pressure from the controlling fluid in proximity of said deformation zone for redirecting the matrix towards the strengthener (column 5, lines 35 – 45 and 50 – 60); wherein said deformation zone is adjacent to a matrix flow front corresponding to a portion of the strengthener impregnated by the matrix, said matrix flow front propagating in the strengthener along said propagation direction as the matrix in said deformation zone is redirected to the strengthener (figure 2; column 5, lines 50 – 60); wherein said mold assembly includes a porous medium provided in said compression chamber for controlling the propagation of the fluid injected in said compression chamber (item 217 – figure 2; column 5, lines 45 – 50); wherein said porous medium is made from a generally deformable element (column 5, lines 45 – 50); wherein said controlling fluid is an incompressible fluid (column 5, lines 37 – 40); wherein the deformable member is further configured to contact said compression wall as the matrix propagates along said propagation direction; and wherein said deformable member is configured to contact said compression wall to thereby form a first pressure region in said compression chamber and a second pressure region in said compression chamber, wherein the first pressure region is upstream of the second pressure region,

and wherein a first pressure in the first pressure region is greater than a second pressure in the second pressure region; wherein said fluid control aperture for injecting said controlling fluid is located in the vicinity of said matrix injection inlet for injecting the matrix (figure 2); and wherein there is a vent for releasing pressure in said compression chamber, the vent being positioned downstream of said fluid control aperture in said propagation direction (figure 2).

With respect to claims 45 and 85 – 89, Cartwright teaches a mold assembly for generating a composite part from a strengthener and a matrix; said mold assembly comprising: a base mold including a strengthener chamber for receiving the strengthener (item 210 – figure 2) and a matrix injection inlet for injecting the matrix in said strengthener chamber (item 220 – figure 2) and an evacuation outlet (item 218 – figure 2), said inlet and said outlet defining a propagation direction (figure 2); a cover mold including a compression chamber defining a compression wall (area between 214 and 215 – figure 2) and a fluid control aperture for injecting a controlling fluid in said compression chamber (item 232 – figure 2); said cover mold being so configured as to be sealingly mounted on said base mold whereby said strengthener chamber and said compression chamber are adjacent (figure 2); and a deformable membrane member provided in a gap defined by said strengthener chamber and said compression chamber, said deformable member generating a deformation zone in said compression chamber from a portion of the matrix permeating the strengthener, said deformable member being pressurized by the controlling fluid in proximity of said deformation zone

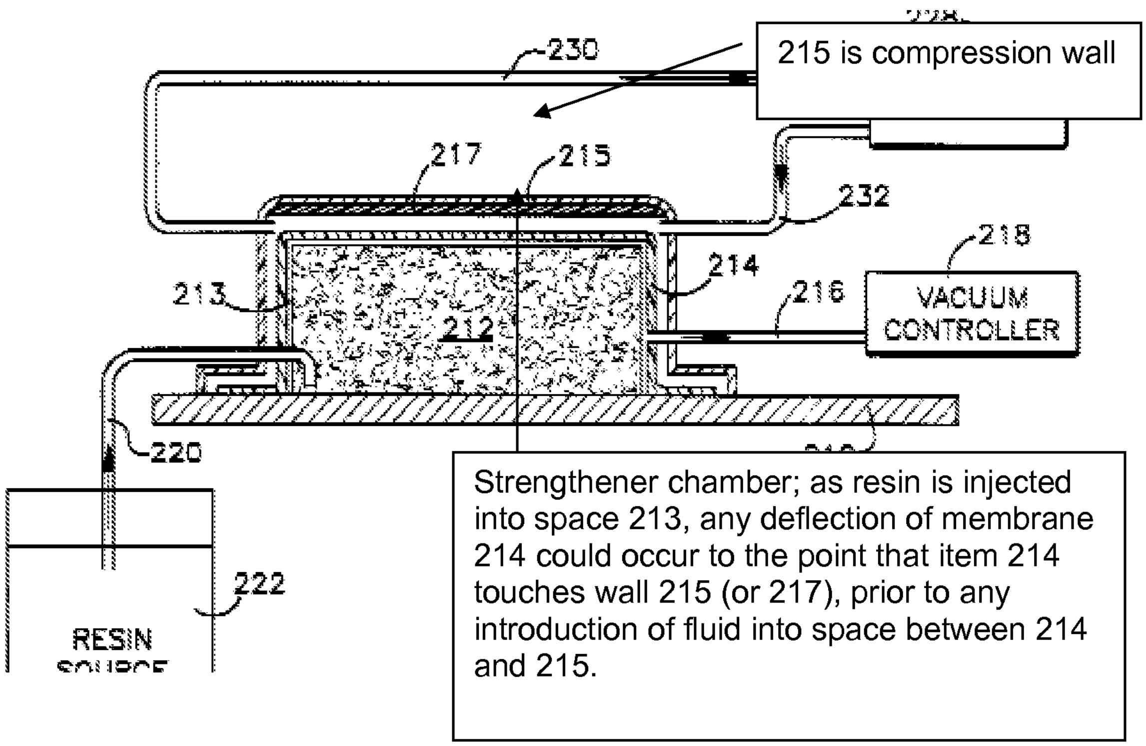
for redirecting the portion of matrix generating said deformation zone back to the strengthener and for propagating the matrix along said propagation direction (column 5, lines 50 – 60); wherein said compression wall provides a physical obstacle to a deflection of said deformable member as the matrix is injected into said strengthener chamber; wherein said controlling fluid is an incompressible fluid (column 5, lines 37 – 40); wherein the deformable member is further configured to contact said compression wall as the matrix propagates along said propagation direction; and wherein said deformable member is configured to contact said compression wall to thereby form a first pressure region in said compression chamber and a second pressure region in said compression chamber, wherein the first pressure region is upstream of the second pressure region, and wherein a first pressure in the first pressure region is greater than a second pressure in the second pressure region; wherein said fluid control aperture for injecting said controlling fluid is located in the vicinity of said matrix injection inlet for injecting the matrix (figure 2); and wherein there is a vent for releasing pressure in said compression chamber, the vent being positioned downstream of said fluid control aperture in said propagation direction (figure 2).

Cartwright teaches a molding apparatus, wherein a strengthener or reinforcing material is disposed in a base mold. The base mold is covered with a cover mold, comprised of a flexible bag material (item 215 – figure 1). The base mold includes a matrix injection inlet for injecting a resin into the strengthener. The cover mold includes a "pressurization chamber” which is controlled via a fluid controller to inject a

pressurization fluid between a deformable member (item 214 – figure 1) and the cover. The fluid controls the amount of pressure exerted on the composite product, so as to control the amount of resin “infused” or impregnated into the strengthener. Because of the fluid control and the vacuum which is generated, the pressurization chamber and the space within it can be varied, depending on the characteristics desired of the composite part (column 6, lines 33 – 45).

The Examiner notes that newly-amended claims 1 and 45 claims that the compression wall provides a "physical obstacle" to a deflection of said deformable member as the matrix is injected into said strengthener chamber. The Examiner contends that the apparatus of Cartwright is fully capable of performing as such because as resin is injected into the plenum or space 213, a large enough quantity of resin may be injected which deforms or deflects the member 214 away from the mold walls and upwards to actually contact the cover mold wall or compression wall. Even though Cartwright may teach a method whereby the apparatus is operated which may differ from the intended use as claimed, the deformable member is capable of deflection upwards to the point where the compression wall of the cover mold ceases the deformable member from any further movement. In addition, considering that the space between member 214 and cover 215 begins as an empty space, when resin is injected into cavity 213, enough resin can deform member 214 to the point that it touches the

compression wall 215 (or layer 217, respectively).



The Examiner also notes that newly-added claims 79 – 80 and 86 – 87 claim the movement of the deformable member or the movement of the deformable member as the matrix is injected into the plenum. The Examiner contends that the apparatus of Cartwright is fully capable of performing as such because enough resin can be injected into plenum or space 213 to cause the deformable member 214 to deflect upwards and contact the compression wall, such that two pressure zones are created, whereby the closest pressure zone to the resin inlet is greater than that furthest from the resin inlet.

The Examiner also notes that Applicant has claimed that the fluid control aperture is located in the "vicinity" of the matrix injection inlet. Given its broadest reasonable interpretation, "vicinity" may be defined as in the same area as and thus

because the fluid control aperture lies around the periphery of the mold, the fluid control aperture is in the “vicinity” of the matrix injection inlet.

The Examiner is also noting that Applicant has claimed "temperature controlling means" in claim 18. Based on the specification, the Examiner is not interpreting such claim language as an invocation of 35 U.S.C. 112, 6th paragraph because paragraph 0111 of the specification states that the temperature may be controlled by thermal resistors or any other known heating means. Thus, given its broadest reasonable interpretation, as long as a prior art reference includes any type of conventional heating means, such means anticipates the claim as written.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Leoni, et al. or Cartwright in view of Fritz, et al. (U.S. 6,257,866). Leoni, et al. and Cartwright teach the characteristics previously described but do not teach that the base mold includes a contact wall, peripheral walls and shoulders and wherein the cover mold includes a complementary contact wall, peripheral walls and shoulders, with a ridge and groove arrangement provided along the shoulders of the molds.

This however, is a conventional or known configuration of a mold assembly. For example, in a vacuum mold to form plastic sheets, Fritz, et al. teach a base mold with a contact wall, peripheral walls and shoulders with a pin or projection, which complementary secures to a cover mold with a similar contact wall, peripheral walls and shoulder with a channel. The channel and projection are used to securely clamp the sheet.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the mold assembly of either Leoni, et al. or Cartwright such that it has walls and a ridge/groove pattern like that of Fritz, et al. since such an assembly is known for securing a sheet in a vacuum mold and since such a configuration is known in the art of vacuum molding.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leoni, et al. or Cartwright in view of Fritz, et al. and further in view of Segen, Jr. (U.S. 6,250,909). Leoni, et al., Cartwright and Fritz, et al. teach the characteristics previously described but do not teach that the ridges and grooves are generally triangular in cross-section.

In a method to clamp a sheet in a thermoforming apparatus, Segen, Jr. teach clamping units with a generally triangular cross-section (figure 4a – 4c). The clamping units secure the sheet to the frame before and during thermoforming.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of either Leoni, et al. or Cartwright with the mold configuration of Fritz, et al., further configured with the v-shaped ridges

and grooves of Segen, Jr. for the purpose of securing the membrane before and during vacuum molding.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leoni, et al. or Cartwright in view of Palmer, et al. (U.S. 4,942,013). Leoni, et al. and Cartwright teach the characteristics previously described but do not teach that the membrane is permeable to gas.

In a vacuum molding apparatus, Palmer, et al. teach the use of multiple membranes or deformable members which contact a chamber wherein a strengthener is impregnated with resin. One of the deformable members is a breather cloth layer. The layer is permeable to gas and allows for an even distribution of pressure and compaction across and along the assembly (column 7, lines 50 – 56).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of either Leoni, et al. or Cartwright with the breather layer of Palmer, et al. for the purpose of evenly distributing the pressure across the assembly, thereby ensuring even compaction as taught by Palmer, et al.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cartwright in view of Gibson (U.S. 5,093,067).

Cartwright teaches the characteristics previously described but do not teach that the deformable element is injected directly into the gap. However, the formation of a diaphragm or elastic member via injection molding is a known process.

For example, Gibson teaches the formation of a flexible diaphragm via the injection of resin material into a gap between two molds (figure 2c).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of Cartwright such that the deformable element is injected directly into the gap for ease of production and because it is known to produce flexible diaphragms wherein a resin material is injected into a gap between an upper and lower mold, as taught by Gibson.

Claims 29 – 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leoni, et al. or Cartwright in view of Seemann (U.S. 5,439,635). Leoni, et al. and Cartwright teach the characteristics previously described but do not teach that the cover mold includes a compression wall with a plurality of passages which are disposed longitudinally and transversally or wherein the diffusion passage is generally aligned with at least one transversal passage and said matrix injection inlet of said base mold is generally aligned with at least one longitudinal passage.

In an apparatus to produce a composite article comprised of reinforcing fibers impregnated with a resin, Seemann teaches that the cover mold or bag is configured with a series of grooves or elongated flow conduits. The flow conduits communicate for fluid flow with a resin distribution pattern (column 5, lines 62 – 68). Thus, any pressure

exerted on the bag is evenly distributed along the pattern, thereby ensuring that the resin flows uniformly into the voids of the strengthener (column 3, lines 60 – 65). Because of even distribution of pressure, the strengthener is completely wetted and any bubbles or voids are eliminated (column 1, lines 40 – 50).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the Applicant's invention to configure the apparatus of either Leoni, et al. or Cartwright with the cover mold of Seemann which includes a grooved surface for the purpose of mimicking the finished outer surface of the product, thereby ensuring that the resin is evenly distributed through the strengthener, eliminating voids and bubbles as taught by Seemann.

Allowable Subject Matter

16. Claims 83 – 84 and 90 – 91 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the closest prior art references of Leoni, et al. and Cartright fail to teach, either alone or in combination, a mold assembly, wherein said compression chamber is divided into a first pressure region and a second pressure region *by said deformable member when the matrix is injected into said strengthener chamber and when said controlling fluid is injected into said compression chamber* or wherein said deformable member is configured to contact said compression wall *when said controlling fluid is injected into said compression chamber.*

With respect to the reference of Leoni, et al., Leoni, et al. teach that a first pressure differential is created when the pressure in the chamber 38 is exerted and is balanced out by pressure created in the plenum 52 exerted by the injected resin (column 10, lines 15 – 20). This first pressure differential is such that the plenum swells away from the mold walls allowing the resin to penetrate or completely saturate the fiber L. Thereafter, a second pressure is exerted in the pressure chamber 38, such that the plenum 52 is restored to its original net dimensions (column 10, lines 40 – 45). Thus, when the pressure in the pressure chamber and the injected resin in the cavity are co-acting, varying pressure regions may be present; *however, the chamber is not necessarily* ***divided by the deformable member into a first pressure region and a second pressure region.***

With respect to the reference of Cartright, Cartright teaches that a vacuum is initially exerted on the mold, such that the member 214 collapses as air is evacuated from cavity 213. Resin is thus, pulled into cavity 213 to penetrate and saturate the substrate 212. Fluid is then circulated into space above the mold via a fluid controller to control the temperature of the resin material. Thus, when the pressure in the compression chamber is exerted by the fluid and the pressure is exerted in the cavity 213 by the injected resin, the pressures co-act; however, *the member 214 does not necessarily divide the compression chamber into a first pressure region and a second pressure region because the fluid flowing within the compression chamber prevents such an occurrence.*

Response to Arguments

17. Applicant's arguments (with respect to claims 1 and 45) filed December 18, 2009 have been fully considered but they are not persuasive. With respect to the reference of Leoni, et al., Applicant argues that Leoni, et al. do not teach that the compression wall is a physical obstacle as claimed because when the first pressure P1 is exerted in the pressure chamber, the bladder and cauls are deflected away from the cover 20. Though this point may be true, the bladder and cauls are still fully capable of deflecting to the point that they can contact the cover and thereby, the cover acts as a physical obstacle. As resin is injected into plenum 52, an excessive amount of pressure caused by the resin may cause the bladder and cauls to swell to the point that the bladder and cauls deflect upward to touch the cover. Pressure may then be adjusted to deflect the cover toward the mold; however, any excess pressure exerted by the resin may cause a deflection of the bladder to the cover. Therefore, the Examiner contends that the apparatus of Leoni, et al. is fully capable of operating as claimed.

With respect to the reference of Cartwright, Applicant similarly argues that because Cartwright teaches the use of a fluid controller 228 which circulates fluid into the space between deformable member 214 and cover 215, the deformable member 214 will not deflect upwards to touch the cover 215. The Examiner disagrees. Assuming the apparatus at *start-up, a vacuum is first pulled to collapse member 214, thereby* evacuating air from the cavity 213. The creation of a vacuum draws resin into the cavity, which if drawn in excess, can cause the cover member 214 to swell and deflect upwards to touch cover 215. Cartwright states that the fluid controller *provides fluid to*

the space between deformable member 214 and cover 215 and thus, prior to the introduction of any fluid, the deformable member 214 is fully capable of deflecting and contacting cover 215 as claimed.

Therefore, the Examiner maintains the rejections as noted above and further maintains the rejections of the associated dependent claims.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIA VERONICA D. EWALD whose telephone number is (571)272-8519. The examiner can normally be reached on M-F, 8 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVE

/Maria Veronica D Ewald/
Primary Examiner, Art Unit 1791